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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Tetsuo Ikegame

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EXAMINER

AZEMAR, GUERSSY

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/627,251		IKEGAME, TETSUO	
	Examiner		Art Unit	
	Guerssy Azemar		2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/24/2003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 4, 6, 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Huibers et al. (6,337,760).

(1) With respect to claim 1:

As shown in figure 17, Huibers et al. teaches an optical switch comprising:
optical-path switching elements (602, 604 in figure 17) for switching one optical path to another optical path (from path 606 to path 614 in figure 17) to allow one light beam for optical communication emitted from one of at least one input optical fiber (606 in figure 17) used for inputting beams to be incident on one of at least one output optical fiber from which beams are outputted (614 in figure 17);

a photo-sensor (618 in figure 17);

light guiding means for guiding the beam to the photo-sensor (616 in figure 17);

and

control means (624 in figure 17) for controlling an angle of each of the optical-path switching elements based on a detection signal obtained through the photo-sensor

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(see figure 17, the control unit is connected to photo-sensor and the path switching element, column 12, lines 41 – 43, control circuit makes fine adjustments to the mirror displacement position in order to steer the beam).

(2) With respect to claim 3:

Huibers et al. teaches the optical switch, wherein the light guiding means (616 in figure 17) is adapted to guide a light beam transmitted through at least one of the optical-path switching elements (transmitted through 604 in figure 17) to the photo-sensor (beam 608b is guided to photo-sensor 618 in figure 17).

(3) With respect to claim 4:

Huibers et al. teaches the optical switch, wherein the light guiding means (616 in figure 17) is adapted to split the light beam transmitted through at least one of the optical-path switching elements (the beam incident on 604 is split into beams 608a and 608b in figure 17) using a beam splitter (616 in figure 17) and then to guide a beam split from the light beam to the photo-sensor (608b goes to the photo-sensor 618 in figure 17).

(4) With respect to claim 6:

Huibers et al. teaches the optical switch, wherein the light guiding means (616 in figure 17) is adapted to partially split a light beam (column 12, lines 29 – 31, the light beam 608b is ten percent of the 608) transmitted through the output the output fiber (614 in figure 17) and to allow the photo-sensor to receive a beam split from the light beam (608b in figure 17).

(5) With respect to claim 10:

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As shown in figure 17, Huibers et al. teaches an optical switch comprising:
optical-path switching elements (602, 604 in figure 17) for switching one optical path to another optical path (from path 606 to path 614 in figure 17) to allow one light beam for optical communication emitted from one of at least one input optical fiber (606 in figure 17) used for inputting beams to be incident on one of at least one output optical fiber from which beams are outputted (614 in figure 17);

a photo-sensor (618 in figure 17);

light guiding means for guiding the beam to the photo-sensor (616 in figure 17);

and

control means (624 in figure 17) for controlling an angle of each of the optical-path switching elements based on a detection signal obtained through the photo-sensor (see figure 17, the control unit is connected to photo-sensor and the path switching element) to adjust at least a relative position and an angle of the beam (column 12, lines 41 – 43, control circuit makes fine adjustments to the mirror displacement position in order to steer the beam).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huibers et al. (6,337,760) in view of Dalziel (20030053232).

Huibers et al. teaches all of the subject matter as described above except for the optical switch, wherein each of the light switching elements includes a galvanometer mirror.

However, Dalziel teaches a galvanometer mirror (see figure 5, and paragraph 0011).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the galvanometer taught by Dalziel in the optical switch taught by Huibers et al. because it reduces a translational motion of the mirror assembly along a direction substantially perpendicular to the rotational axis.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huibers et al. (6,337,760) in view of Cormack (20020159685).

Huibers et al. teaches all of the subject matter as described, except for the optical switch wherein the light guiding means includes the photo-sensor comprising (i) a base having a hole through which a light beam passes, the beam being transmitted through at least one optical-path switching element, and (ii) at least two or more light receiving elements disposed around the hole on the base.

However, Cormack teaches (i) a base having a hole through which a light beam passes, the beam being transmitted through at least one optical-path switching element (the output fibers 150 enters at the base of the coupler holding them together, the beam 138 enters the hole through the lenses 142 in figure 1), and (ii) at least two or more light

receiving elements disposed around the hole on the base (there are many fibers "light receiving elements" at the base of the hole formed by the coupler).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the structure taught by Cormack in the optical switch taught by Huibers et al. because it allows the light beam to have a better focus on the target, which are the light receiving elements.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huibers et al. (6,337,760) in view of Wang et al. (6,721,474) and Ishii (3,885,143).

(1) With respect to claim 7:

Huibers et al. teaches the optical switch, wherein the light guiding means comprises:

an output optical fiber for capturing a light beam transmitted through at least one optical-path switching element (614 in figure 17);

a photo coupler (161 in figure 17) which is disposed on an output terminal of the output optical fiber and which splits the beam into a beam for the photo-sensor and a beam for communication (616 in figure 17 performs the same function which is to split the beam into two other beams); and

However, Huibers et al. does not teach a sensor fiber for guiding the split beam for a fiber used for the photo-sensor to the photo-sensor, and

each optical-path switching element is constructed so as to be oscillated small when a driving signal with a predetermined frequency is supplied thereto.

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Wang et al. teaches a sensor fiber for guiding the split beam for a fiber used for the photo-sensor to the photo-sensor (16 in figure 1, the reference teaches sensor fiber guiding the light to a receiver, which is interpreted as a photo diode).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the sensor fiber taught by Wang et al. in the optical switch taught by Huibers et al. because it would help with the focus of the beam onto the output fiber and allow for appropriate alignment of the optical input and output with low and uniform insertion losses.

However, Wang et al does not teach each optical-path switching element is constructed so as to be oscillated small when a driving signal with a predetermined frequency is supplied thereto.

Ishii teaches each optical-path switching element is constructed so as to be oscillated small when a driving signal with a predetermined frequency is supplied thereto (see abstract, first lines, M different frequencies deflect M different deflectors in M different directions, a specific direction of the mirror depends on a specific frequency).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the deflectors taught by Ishii in the optical switch taught by Huibers et al. because it would render the simplest identification of coincidence matching.

(2) With respect to claim 8:

Huibers et al. teaches the optical switch, wherein each optical-path switching element is constructed so as to be oscillated small in two directions (figure 8 shows the direction of rotation of the mirrors around an axis 334).

(3) With respect to claim 9:

Huibers et al. teaches all of the subject matter as described, except for the optical switch wherein the driving signal comprises driving signals to be supplied to each of the optical-path switching elements have different frequencies so that the optical path switching elements are enabled to be oscillated in the two directions.

Ishii et al. teaches the optical-path switching elements have different frequencies so that the optical path switching elements are enabled to be oscillated in the two directions (see abstract, first lines, M different frequencies deflect M different deflectors in M different directions, a specific direction of the mirror depends on a specific frequency).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the deflectors taught by Ishii in the optical switch taught by Huibers et al. because it would render the simplest identification of coincidence matching.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guerssy Azemar whose telephone number is (571) 270-1076. The examiner can normally be reached on Mon-Fri (every other Fridays off).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Guerssy Azemar

11/08/2006


KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER